

REMARKS

Reconsideration and allowance of the subject application are respectfully requested.

Claims 1, 7-12 and 14-17 are pending in this application (claim 6 was cancelled in the Amendment dated June 28, 2002).

The applicants respectfully traverse the rejection of claims 1, 6-11 and 14-16 under 35 USC 103(a) over either of Kasahara et al. or Ohbayashi et al in view of Waller et al. These references do not make the presently claimed invention to be obvious.

The presently claimed invention, as recited in claim 1, is directed to an ink-jet recording sheet comprising a water resistant support and at least one ink-receptive layer provided on the support. At least one of the ink-receptive layer contains fumed silica fine particles having an average primary particle diameter of 20 nm or less in an amount of 8 g/m² or more, a hydrophilic binder in an amount of 50% by weight or less based on the amount of the fumed silica and at least one water-soluble polyvalent metal compound selected from the group consisting of a basic polyaluminum hydroxide compound and a water-soluble compound containing an element selected from the group consisting of titanium and zirconium.

Kasahara discloses an ink-jet recording sheet comprising a water-resistant support, and a recording layer containing inorganic fine particles such as fumed silica, a hydrophilic binder such as polyvinyl alcohol, a water-soluble cation mordant and a hardening agent such as boric acid or a borate provided on the water-resistant support.

Obayashi discloses an ink-jet recording sheet having a support and an ink absorption layer provided on the support having a specific center line average roughness (Ra).

Waller discloses that a metal salt forms a complex with a dispersing aid that surrounds the pigment particles in the ink (see page 13, lines 11-13 and 22-23 of reference). Waller also discloses that

“examples of inorganic multivalent metal salts ... include the metal cations from Group II and above in the Periodic Table, such as Ca, Mg, Ti, Zr, Fe, Cu, Zn, Ta, Al, Ga, Sn, with counter ions such as sulfate, nitrate, acetate, propionate and the like.” (see page 15, lines 14-18).

However, Waller further discloses that

“Specific examples of preferred salts include aluminum sulfate, aluminum nitrate, gallium nitrate, ferrous sulfate, chromium sulfate, calcium propionate, zinc sulfate, zinc acetate, zinc chloride, calcium chloride, calcium bromide, magnesium sulfate, magnesium chloride, and combinations thereof. ... Of the various possible salts, aluminum sulfate is presently preferred.” (see page 16, lines 1-6).

In the working examples of Waller, only aluminum sulfate, potassium-aluminum sulfate, ammonium-aluminum sulfate, and ferrous-aluminum sulfate are used, and there is no specific disclosure in the reference about a water-soluble polyvalent metal compound selected from the group consisting of a basic polyaluminum hydroxide compound and a water-soluble compound containing an element selected from the group consisting of titanium and zirconium, as in the presently claimed invention.

Thus, Waller only suggests the selection of aluminum sulfate, potassium-aluminum sulfate, ammonium-aluminum sulfate, and ferrous-aluminum sulfate (and further aluminum nitrate, gallium nitrate, ferrous sulfate, chromium sulfate, calcium propionate, zinc sulfate, zinc acetate, zinc chloride, calcium chloride, calcium bromide, magnesium sulfate, magnesium chloride).

In contrast to the presently claimed invention, Waller provides no suggestion or motivation to employ a water-soluble polyvalent metal compound selected from the group consisting of a basic polyaluminum hydroxide compound and a water-soluble compound containing an element selected from the group consisting of titanium and zirconium.

Moreover, when the recording sheets 1 to 4 and 6 to 9 in Example 1 of the present application as presented in Table 1 (see page 23) are compared with the recording sheet 5 using aluminum chloride shown in same Table 1, the ink-jet recording materials containing a water-soluble polyvalent metal compound selected from the group consisting of a basic polyaluminum hydroxide compound and a water-soluble compound containing an element selected from the group consisting of titanium and zirconium in the ink-receptive layer, clearly show excellent characteristics as compared with the ink-jet recording material using the recording sheet containing aluminum chloride of the recording sheet 5 shown in Table 2 on page 26 of the present specification, particularly in water-resistance.

Accordingly, the applicants submit that the presently claimed invention is nowhere disclosed, suggested or made obvious by the teachings of the cited references. The presently claimed invention is fully allowable under Section 103(a) in view of the cited art.

In view of the above, it is believed that this application is in condition for allowance and a Notice to that effect is respectfully requested.

Respectfully submitted,

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